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| Area, Surface Area and Volume (Module 5)  Area, Surface Area and Volume (Module 5) | 1: The Area of Parallelograms Through Rectangle Facts  2: The Area of Right Triangles  3: The Area of Acute Triangles Using Height and Base  4: The Area of All Triangles Using Height and Base  5: The Area of Polygons Through Composition and Decomposition  6: Area in the Real World  7: Distance in the Coordinate Plane  8: Drawing Polygons on the Coordinate Plane  9: Determining Area and Perimeter of Polygons on the Coordinate Plane  10: Distance, Perimeter and Area in the Real World  11: Volume with Fractional Edge Lengths and Unit Cubes  12: From Unit Cubes to Formulas for Volume  13: The Formulas for Volume  14: Volume in the Real World  15: Representing Three-Dimensional Figures Using Nets  16: Constructing Nets  17: From Nets to Surface Area  18: Determining Surface Area of Three Dimensional Figures  19: Surface Area and Volume in the Real World  19a: Applying Surface Area and Volume to Aquariums **(optional)**  *Supplement with Holt On Core Unit 6 Problem Solving: Something’s Fishy*  **Assessment** | New or Recently Introduced Terms  **Altitude and Base of a Triangle** (An *altitude* of a triangle is a perpendicular segment from a vertex of a triangle to the line containing the opposite side. The opposite side is called the *base*. For every triangle, there are three choices for the altitude, and hence there are three base-altitude pairs. The *height* of a triangle is the length of the altitude. The length of the base is called either the *base length* or, more commonly, the *base.* Usually, context makes it clear whether the *base* refers to a number or a segment. These terms can mislead students: base suggests the bottom, while *height* usually refers to vertical distances. Do not reinforce these impressions by consistently displaying all triangles with horizontal bases.)  **Cube** (A *cube* is a right rectangular prism all of whose edges are of equal length.)  **Hexagon** (Given different points , , , , , and in the plane, a*-sided polygon,* or *hexagon,* is the union of segments , , , , , and such that (1) the segments intersect only at their endpoints, and (2) no two adjacent segments are collinear. For both pentagons and hexagons, the segments are called the *sides*, and their endpoints are called the *vertices*. Like quadrilaterals, pentagons and hexagons can be denoted by the order of vertices defining the segments. For example, the pentagon has vertices , , , , and that define the segments in the definition above. Similar to quadrilaterals, pentagons and hexagons also have *interiors*, which can be described using pictures in elementary school.)  **Line Perpendicular to a Plane** (A line intersecting a plane at a point is said to be *perpendicular to the plane*  if is perpendicular to every line that (1) lies in and (2) passes through the point . A segment is said to be perpendicular to a plane if the line that contains the segment is perpendicular to the plane. In Grade 6, a line perpendicular to a plane can be described using a picture.)  **Parallel Planes** (Two planes are *parallel* if they do not intersect. In Euclidean geometry, a useful test for checking whether two planes are parallel is if the planes are different and if there is a line that is perpendicular to both planes.)  **Pentagon** (Given different points , , , , and in the plane, a *-sided polygon,* or *pentagon*, is the union of segments , , , , and such that (1) the segments intersect only at their endpoints, and (2) no two adjacent segments are collinear.)  **Right Rectangular Prism** (Let and be two parallel planes. Let be a rectangular region[[1]](#footnote-1) in the plane . At each point of , consider the segment perpendicular to , joining to a point of the plane . The union of all these segments is called a *right rectangular prism.* It can be shown that the region in corresponding to the region is also a rectangular region whose sides are equal in length to the corresponding sides of . The regions and are called the *base faces* (or just *bases*) of the prism. It can also be shown that the planar region between two corresponding sides of the bases is also a rectangular region called the *lateral face* of the prism*.* In all, the boundary of a right rectangular prism has *faces*: the base faces and lateral faces. All adjacent faces intersect along segments called *edges*—base edges and lateral edges.)  **Surface of a Prism** (The *surface* *of a prism* is the union of all of its faces—the base faces and lateral faces.)  **Triangular Region** (A *triangular region* is the union of the triangle and its interior.)  **Familiar Terms and Symbols[[2]](#footnote-2)**  Angle Area  Length of a Segment Parallel  Parallelogram Perimeter  Perpendicular Quadrilateral  Rectangle Segment  Square Trapezoid  Triangle Volume  **Suggested Tools and Representations**  Coordinate Planes  Nets Prisms Rulers | 6.G.A.1 - Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  6.G.A.2 - Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas  *V = l w h* and *V = b h* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  6.G.A.3 - Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  6.G.A.4 - Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. |
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1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)